



<http://www.mn-arts.org/>

January 2015 Edition

From the President

We're coming up on another exciting year for our club. I still think this is one of the best and more unique clubs in the area. We are dedicated to understanding how a radio works and this year I believe we are taking some big steps to help you do that. Our build-a-thon on March 7th will be unique as we build a receiver designed by our very own Craig Johnson, AA0ZZ. See his write up in this newsletter for more information. We will also be talking a little bit more about it at the meeting Saturday Feb 7th, so come prepared to order your kit. If you are unable to be there to order, please email me and let me know.

Also Feb 7th is the MN QSO Party from 8:00 AM to 6:00 PM. I hope many of you get on the air (when you aren't at the meeting!) and represent the club well. Remember that when you submit your logs to list "MN Amateur Radio Technical Society" as your affiliated club. The Minnetonka club is also making their club station available to anyone who would like to operate before or after the meeting. Please contact Jim Nebalek at nedbalek@winternet.com if you are interested as I believe there is already a group of scouts operating part of the morning.

The board recently met to review the survey results that many of you took last fall. Thank you to everyone that took the time to complete it and thanks to Paul Bushouse, N0TYE, for setting it up. Overall you were very affirming of the direction of the club with some good suggestions for improvements. One of the questions dealt with the day and time of the meeting. A large majority were in favor of keeping it on Saturday afternoons, with a few suggesting Saturday mornings. Therefore since the vast majority were in favor of the current time, we will keep it as is.

There were also some suggestions about length of meetings, dues, name badges, and a few other items that we will discuss at the meeting this Saturday. If you are unable to attend we will send out an email with the rest of what we talk about in next month's newsletter. If you have any questions before then, please let me know.

Hope to see you this Saturday, Feb 7th, when Bob Liesenfeld, WB0POQ will present on the "Huff & Puff" frequency stabilizer. See you then.

73 de chuck ka8hde

March Build-a-Thon

At the March 7 MARTS Build-a-thon many of us will be building my new ZZR-40 receiver. This is a simple Direct Conversion receiver that I designed after playing with many different similar designs that have been published since the 1980s, each having its own twist. I was absolutely amazed with the first one of this type that I tried and I think you will be too. The ZZR-40 features the two building blocks that are very popular for this kind of receiver - a NE602 oscillator/mixer and a LM386 audio amplifier. There are two versions that can be built - a crystal-controlled version (crystals for 7.030 MHz for CW reception and 7.285 for SSB reception are supplied) as well as a full VFO version. The crystal frequency can be "pulled" 2 to 3 kHz by turning the tuning knob. Then, by changing 3 components in the oscillator the receiver can be changed from crystal-controlled to a full VFO. Parts are supplied for both versions so the builder can try them both.

One of my requirements for this receiver design was that it must work "right out of the box" with no tweaking / adjustments of any kind. This means there are some trade-offs in performance. For example, the front-end RF filter is wider than it would need to be if it had a tuned circuit. The audio section is also very wide, meaning that you may hear other nearby stations. I believe the trade-offs are reasonable, however, because the design shows what can be done with a very few components. Please note that this is a DEMONSTRATION receiver and not one that you will want as your main station receiver. For example, the VFO is very sensitive to changes in

frequency as the tuning knob is turned as well as hand movement nearby, especially since it's not in an enclosure. Similar commercial receivers (e.g. the Ramsey-40 receiver) behave in a similar manner, even though that one is in a case.

As part of the build-a-thon session, we will be having a few very short "Tech Talks" in which we will explain how the receiver works. We will look at the block diagram and then show the how fundamental requirements of any receiver are achieved in this simple design. We will talk about the front-end filter, the mixer, the local oscillator, and the audio amplifier. We will talk about how the design could be improved with additional components, complexity, and cost. The "Tech Talks" provide an edge and will make the build-a-thon to be more than just soldering practice.

I am keeping the cost of the ZZR-40 kit to \$25 for this first run with the MARTS club because I was able to scrounge some parts left over from other projects. If we decide to market it on a wider scale it will have be about \$10 higher. The parts list and cost is included in the manual. If you want to have a sneak-peak at the manual you can see it at an "unannounced location" on my web site since it's not available to the public yet. My web site is www.cbjohn.com/aa0zz but the ZZR-40 manual can be found at:

www.cbjohn.com/aa0zz/downloads/ZZRX-40_Manual.pdf

Craig, AA0ZZ

January Meeting Minutes

Chuck Stroud, KA8HDE, called the meeting to order at 1:30 PM. 24 were in attendance.

Introductions were made which included everyone's most memorable ham radio memory.

Old Business:

- The December meeting minutes were approved.
- No Treasurers report this month.
- The February meeting will also include the chance to work the Minnesota QSO party from the Minnetonka club's station. All were invited to join in.
- The March Build-a-Thon was discussed. The main project will be Craig's, AA0ZZ, 40 meter receiver. Craig passed around the prototype which is now finished. It can be built either crystal controlled or with a VFO. In addition to building the kit the circuit will be fully explained. It should be a great learning experience! Cost of the kit is \$25.

New Business:

- Next month's presentation will be by Bob Liesenfeld, WB0POQ, who will speak on the "huff & puff" frequency stabilizer.

Show & Tell

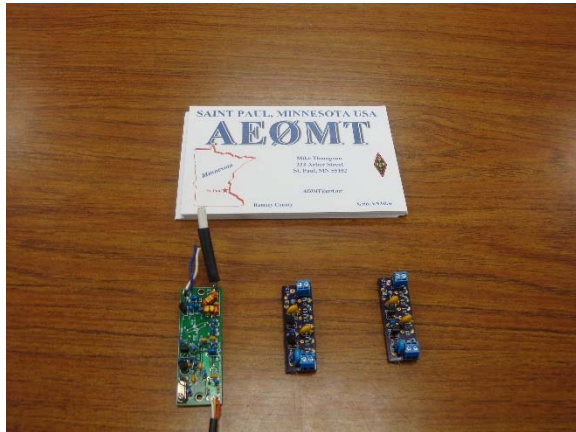
Chuck Stroud, KA8HDE, brought in a Fists article where there was a review of Craig's, AA0ZZ, keyer kit.

Steve Ulrich, NW0C, brought in a copy of the International Microwave Handbook, Test Equipment for the Radio Amateur & Weekend Projects for the Radio Amateur – all published by RSGB. He also brought in a finished Elecraft KX1 and a Kent straight key.



Mike Thompson, AE0MT, showed us the Softrock he recently built which he uses with his Kenwood TS2000. The Softrock takes the Kenwood's IF and processes it. The output is used to display a pan adapter which gives him

about a 40 KHz display. You can see more on his YouTube channel.

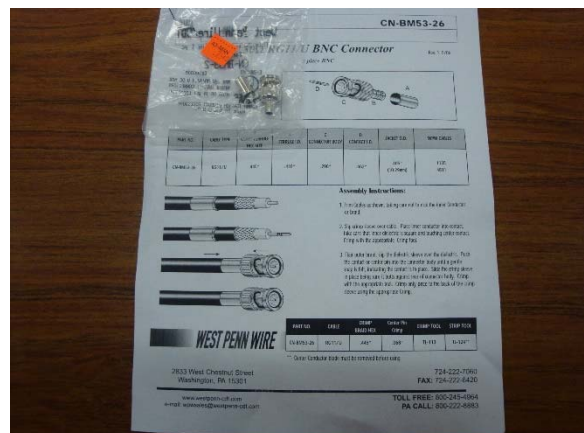


Doug Marsh, N8TUT, brought in an Arduino based component tester he recently acquired. It provides capacitance, inductance & resistance. Cost was around \$20.



John Krawczak, KJ0P, brought an antenna he recently constructed for a Radio Astronomy project. The antenna will receive a very low frequency station – around 100 KHz. The output will get converted and fed into the computer sound card. The software will monitor the received signal. A solar flare will modify the signal and the computer logs this. John also brought in “The Radio Sky” which deals with amateur radio astronomy. John also mentioned

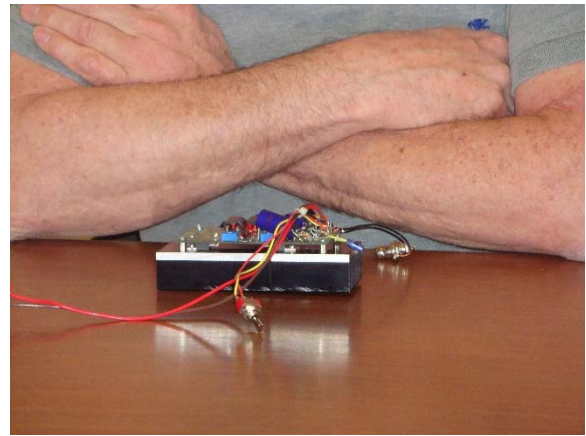
that Ax Man has BNC fittings available at a good price.



Bob Liesenfeld, WB0POQ, brought in a 40 meter transceiver he built into an Altoid's tin. The radio was built with point to point construction. Very nice job!!



Craig Siegenthaler, W7BGO, brought in a power amplifier built around a Mitsubishi FET. 1 watt in produces 25 watts out. It operates 80 through 10 meters. The amplifier operates class AB. More information can be found in the August 2010 QST article "Multi Band 50 Watt Linear Amplifier".



Mike Burk, KD0JYE, showed us a component checker he recently acquired. The unit came with Kelvin clips. Mike looks forward to learning all of its capabilities.



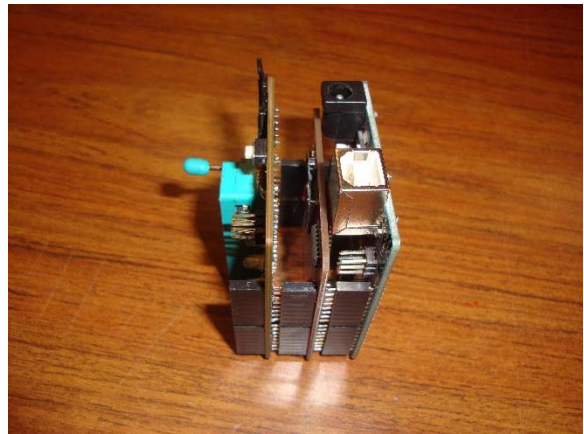
Leon Dill, W0COE, brought in 3M double sided tape for anyone that could use some.



January Presentation

Mike Thompson, AE0MT gave us an excellent tutorial on Arduino's. These are microcontrollers built around the AT Mega chip. Mike explained how everything was open sourced and then went on to show us how he implemented an Arduino to control his satellite rotors. He brought in a breadboard which demonstrated what he implemented in his shack. He also had a number of videos showing his implementation. One showed the antenna array tracking a satellite. Mike topped it off with a demonstration of how easy it is to program an Arduino.

Thank you for a great presentation!!



Respectfully submitted,
Steve, NW0C

Club Officers:

President: Chuck Stroud/KA8HDE
Vice Pres: Russ Ramirez/K0WFS
Secretary: Steve Ulrich/NW0C
Treasurer: Paul Bushouse/N0TYE
At Large: Craig Johnson/AA0ZZ

ka8hde79@gmail.com
russ.ramirez@gmail.com
ulrichs@comcast.net
p-bushouse@bethel.edu
aa0zz@cbjohn.com